

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested. Upon entry of this amendment, claims 21 and 27 are amended, claim 28 is added and claims 22-26 are cancelled, leaving claims 21, 27 and 28 pending with claims 21 and 27 being independent. No new matter has been added.

Rejections Under 35 U.S.C. §102(b)

Claim 27 has been rejected under 35 U.S.C. § 102(b) as being anticipated by Shintani (JP 11-080952).

Applicants submit that amended claim 27 is allowable over the cited prior art. Claim 27 recites an apparatus for manufacturing a plasma display panel (PDP) for forming a metal oxide film onto a substrate of the PDP, the apparatus comprising a gas-introducing means for introducing at least one of a first gas containing oxygen gas to suppress oxygen deficiency in the metal oxide film and a second gas to increase oxygen deficiency in the metal oxide film, the second gas including at least one gas selected from the group consisting of water vapor, hydrogen, carbon monoxide, and carbon dioxide into the deposition room and a control means for controlling an amount of evacuation from the deposition room based on information supplied from a partial-pressure detecting means and information supplied from a degree of vacuum detecting means such that the partial pressure of the at least one of the first gas and the second gas and the degree of vacuum in the deposition room can fall within a given range.

In the invention covered by claim 27, the characteristics of the protective layer of metal oxide film made of, for example MgO, differ depending on an amount of oxygen deficiency contained in the metal oxide film. The present invention, as claimed, thus controls the amount of oxygen deficiency within a given range for stabilizing the characteristics of the protective layer. Such control is for introducing oxygen into the deposition room for reducing an amount of the oxygen deficiency and reducing an amount of dangling bonds. This control is also for introducing a gas selected from the group consisting of water vapor, hydrogen, carbon monoxide, and carbon dioxide, into the deposition room for increasing the amount of the oxygen deficiency

and increasing the amount of the dangling bonds. In other words, when the film is formed, at least two kinds of gasses can be introduced in the deposition room, and a controlling range of a partial pressure of respective gases is determined for controlling gases within the respective ranges. A protective film having stable characteristics can thus be obtained.

Shintani fails to disclose or render obvious such an apparatus. In particular, Shintani discloses a system that introduces oxygen, hydrogen, and water vapor into a deposition room where MgO film is formed, and controls a partial pressure of the gases within a range for forming MgO film. However, Shintani is silent with regard to the advantages of the present invention, as claimed. That is, Shintani fails to disclose a gas-introducing means for introducing at least one of a first gas containing oxygen to suppress the amount of oxygen deficiency in the metal oxide film and a second gas including at least one gas selected from the group consisting of water vapor, hydrogen, carbon monoxide, and carbon dioxide into the deposition room for increasing the amount of oxygen deficiency and a control means for controlling the amount of the at least one of the first and second gasses to be introduced into the deposition room and an amount of evacuation from the deposition room based on information supplied from the partial-pressure detecting means and information supplied from the degree of vacuum detecting means such that the partial pressure of the at least one of the first and second gasses and the degree of vacuum in the deposition room can fall within a given range.

In other words, Shintani fails to disclose or render obvious that the oxygen and other gases can be controlled independently, as recited in claim 27. Furthermore, there is no reasoning in the prior art to modify Shintani such that it would have rendered claim 27 obvious.

Therefore, Applicants submit that independent claim 27 and dependent claim 28 are allowable over the cited prior art.

Rejections Under 35 U.S.C. §103(a)

Claim 21 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shintani in view of Okuyama et al. (JP 2001-243886).

Claim 21 is allowable since, Shintani fails to disclose or render obvious a method of manufacturing a plasma display panel (PDP) comprising the process of forming a metal oxide

film onto a substrate of the PDP, the process of forming the metal oxide comprising introducing oxygen gas into a deposition room and controlling a partial pressure of the oxygen gas within a range from 3×10^{-3} Pa to 3×10^{-2} Pa, so as to suppress oxygen deficiency in the metal oxide film and introducing another gas to increase the oxygen deficiency in the metal oxide film, the other gas including at least one gas selected from the group consisting of water vapor, hydrogen, carbon monoxide, and carbon dioxide into a deposition room and controlling the partial pressure of the gas to be introduced into the deposition room. In other words, Shintani fails to disclose or render obvious a method that controls the oxygen and other gasses independently, as recited in claim 21.

Furthermore, Okuyama fails to cure the deficiencies of Shintani. Specifically, Okuyama discloses that water, carbon monoxide, and carbon dioxide are contained in an amount of 110 ppm as impurity gas. However, the presence of these gases in the deposition room of metal oxide film does not affect the gas partial pressure.

Therefore, Applicants submit that claim 21 is allowable over the cited prior art.

Claims 22, 25 and 26 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shintani in view of Okuyama as applied above and further in view of Kawakusu et al. (JP 2000-277009). Claim 23 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shintani in view of Okuyama as applied above and further in view of Shiokawa et al. (US 2003/0077972). Claim 24 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shintani in view of Okuyama as applied above and further in view of Furuya (JP 09-295894).

These rejections are moot, since claims 22, 25 and 26 have been cancelled.

Double Patenting Rejection

Claim 21 has been provisionally rejected on the ground of non-statutory obviousness type double patenting as being unpatentable over claim 6 of co-pending application number 10/532,672 in view of Shintani (JP 11-080952).

Applicants respectfully request that this double patenting rejection be withdrawn, since, as stated above, Shintani fails to disclose or render obvious that the oxygen and other gases can be controlled independently.

Conclusion

In view of the foregoing amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Should the Examiner believe there are any remaining issues that must be resolved before this application can be allowed, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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